

AMENDMENT TO THE CLAIMS

Please amend the claims as indicated below.

1 - 28. (Canceled)

29. (Currently amended) A system for performing time-domain equalization, the system comprising:

a beamsplitter configured to split a first optical signal comprising a light pulse into a plurality of beams;

a delay component optically coupled to the beamsplitter, the delay component configured to generate a delayed first beam by providing a first delay to delay at least a first beam in the plurality of beams and generate a delayed second beam by providing a second delay to a second beam in the plurality of beams;

a birefringent component configured to receive the delayed first beam and the delayed second beam from the delay component and operable to optically scale the delayed first and second beams by providing a first rotation of rotate a polarization plane of the first beam and a second rotation of a polarization plane of the second beam; and

a walk-off crystal configured to split each of the optically scaled first and second beams receive the rotated first beam and operable to split the rotated first beam into a first and a second pair of beams; and that is used to perform time-domain equalization of the light pulse

an array of photodetectors comprising a first and a second pair of photodetectors configured to receive the first and the second pair of beams respectively and generate therefrom a first and a second electrical component of an electrical signal that corresponds to the input optical signal after time-domain equalization.

30. (Currently amended) The system of claim 29, further comprising:

a control system configured to control the birefringent component for rotation of the polarization plane of the first beam, wherein the rotation provides an optical optically scaling of the delayed first beam and second beams.

31. (Previously presented) The system of claim 30, wherein the control system generates coefficients used to perform time-domain equalization for approximating an ideal pulse shape.
32. (Previously presented) The system of claim 31, wherein the control system uses an algorithm to minimize a mean square error between the light pulse and an idealized light pulse.
33. (Previously presented) The system of claim 29, wherein the birefringent component comprises an array of liquid crystal cells.
34. (Currently amended) The system of claim 29, wherein the first rotation of the polarization plane determines the intensity of the optically scaled first beam beams in the first pair of beams and the second rotation determines the intensity of the optically scaled second beam.
35. (Canceled)
36. (Currently amended) The system of claim 29 35, further comprising:
a polarization splitter configured to receive an input optical signal and split the input optical signal into the first optical signal and a second optical signal.
37. (Previously presented) The system of claim 36, wherein the first optical signal has a first plane of polarization and the second optical signal has a second plane of polarization, the first plane of polarization being different than the second plane of polarization.
38. (Currently amended) A method for performing time-domain equalization, the method comprising:
splitting a first optical signal comprising a light pulse into a plurality of beams;
optically delaying ~~at least~~ a first beam and a second beam in the plurality of beams;

optically scaling the delayed first and second beams by providing a first rotation of rotating a polarization plane of the delayed first beam and a second rotation of a polarization plane of the delayed second beam;

transmitting the rotated optically scaled first and second beams first beam through a walk-off crystal to produce a first and a second pair of beams respectively; and

using an array of photodetectors to generate from the first and second pair of beams a first and a second electrical component respectively of an electrical signal that corresponds to the input optical signal after time-domain equalization.

~~using the first pair of beams to perform time-domain equalization of the light pulse.~~

39. (Currently amended) The method of claim 38, further comprising:

providing a control for controlling the first and the second rotation in the birefringent component rotation of the polarization plane of the delayed first beam.

40. (Previously presented) The method of claim 39, wherein providing the control comprises:

using an algorithm containing coefficients to minimize a mean square error between the light pulse and an idealized light pulse.

41- 42. (Canceled)

43. (Currently amended) The method of claim 38, wherein providing the first and second rotation rotating the polarization plane of the delayed first beam comprises:

providing an array of birefringent liquid crystal cells;

transmitting the delayed first beam and second beams through the array of birefringent liquid crystal cells; and

controlling the array of birefringent liquid crystal cells to provide the first and second rotation rotate the polarization plane of the delayed first beam.

44. (Currently amended) The method of claim 38, wherein providing the first and second rotation rotating the polarization plane of the delayed first beam comprises:

~~predetermining the first and second rotation imparted rotation of the polarization plane of the delayed first beam.~~

45. (Previously presented) The method of claim 38, wherein rotating the polarization plane of the delayed first beam comprises:

providing a control system adapted to analyze the first optical signal and to determine coefficients used for rotating the polarization plane of the delayed first beam.

46 - 47. (Canceled)

48. (New) A system for performing time-domain equalization, the system comprising:

a beamsplitter configured to split a first optical signal comprising a light pulse into a plurality of beams;

a delay component optically coupled to the beamsplitter, the delay component configured to generate a delayed first beam by providing a first delay to a first beam in the plurality of beams and generate a delayed second beam by providing a second delay to a second beam in the plurality of beams;

a birefringent component configured to receive the delayed first beam and the delayed second beam from the delay component and operable to use a first scaling coefficient to set the delayed first beam to a first intensity and to use a second scaling coefficient to set the delayed second beam to a second intensity;

a walk-off crystal configured to receive the delayed first beam of the first intensity and split the delayed first beam into a first pair of beams, the walk-off crystal further configured to receive the delayed second beam of the second intensity and split the delayed second beam into a second pair of beams; and

an array of photodetectors comprising a first and a second pair of photodetectors configured to receive the first and the second pair of beams respectively and generate therefrom a first and a second electrical component of an electrical signal that corresponds to the input optical signal after time-domain equalization.

49. (New) The system of claim 48, wherein setting the delayed first beam to the first intensity comprises a first rotation of a polarization plane of the delayed first beam and setting

the delayed second beam to the second intensity comprises a second rotation of a polarization plane of the delayed second beam, the first rotation different than the second rotation.

50. (New) The system of claim 48, wherein the first and second scaling coefficients are individually equal to one of a) +1, b) -1, and c) 0.

51. (New) The system of claim 48, wherein the birefringent component is an array of liquid crystal cells and the first and second intensities are set by controlling the array of liquid crystal cells.

52. (New) The system of claim 48, in which:

the delay component is further configured to generate a delayed third beam by providing a third delay to a third beam in the plurality of beams;

the birefringent component is further configured to receive the delayed third beam and operable to use a third scaling coefficient to set the delayed third beam to a third intensity;

the walk-off crystal is further configured to receive the delayed third beam of the third intensity and split the delayed third beam into a third pair of beams; and

the array of photodetectors further comprises a third pair of photodetectors configured to receive the third pair of beams and generate therefrom a third electrical component of the electrical signal that corresponds to the input optical signal after time-domain equalization.

53. (New) The system of claim 52, further comprising:

a control system configured to analyze the first optical signal and determine therefrom the first, second, and third scaling coefficients.

54. (New) The system of claim 48, further comprising:

a control system configured to analyze the first optical signal and determine therefrom the first and second scaling coefficients.

55. (New) The system of claim 54, wherein the control system is configured to use an adaptive equalization algorithm to determine the first and second scaling coefficients.